



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,291	02/07/2006	Paul Colfer	200316610-2	6028
22879 7590 11/12/2009 HEWLETT-PACKARD COMPANY Intellectual Property Administration 3404 E. Harmony Road Mail Stop 35 FORT COLLINS, CO 80528			EXAMINER HO, ANTHONY	
			ART UNIT 2815	PAPER NUMBER
			NOTIFICATION DATE 11/12/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM
ipa.mail@hp.com
laura.m.clark@hp.com

Office Action Summary

Application No.

10/533,291

Applicant(s)

COLFER ET AL.

Examiner

ANTHONY HO

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20, 22-30, 63, 64, 68, 71, 74 and 75 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20, 22-30, 63, 64, 68, 71, 74 and 75 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 29, 2009 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-20, 22-30, 63, 64, 68, 71, 74 and 75 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 22 recite, "the nanoparticles consisting of only either silicon element or germanium element." However, applicant's originally filed specification does not explicitly nor inherently state that the nanoparticles consist only silicon element or

germanium element. For example, page 25, line 21 to page 26, line 5 of the originally filed specification discloses the silicon or germanium particles have surface termination of an organic ligand. It is well known in the art that silicon, for example, have a surface termination that is typically hydrogen. Thus, nanoparticles that only consist of either silicon or germanium is not inherently or explicitly disclosed in the originally filed specification and is being treated as new matter.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20, 22-30, 63-64, 68, 71, and 74-75 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yudasaka et al (EP 1085578).

In re claims 1-3, Yudasaka et al discloses a method of manufacturing an electronic component comprising at least one n- or p-doped portion, comprising the steps of: co-depositing semi-conducting nanoparticles as a solid in liquid suspension and dopant on

a substrate, the nanoparticles consisting of only either silicon element or germanium element (i.e. in this case, it is inherent that nanoparticles of only either silicon element or germanium element have surface termination, which is usually hydrogen. Yudasaka et al discloses compound 5 that is only silicon element nanoparticle with surface termination of hydrogen); fusing in situ on the substrate the nanoparticles by heating to form a continuous layer through a physical change of melting; and recrystallizing the continuous layer (paragraph 0004; paragraph 0045 – paragraph 0066).

In re claims 4-6, Yudasaka et al discloses the step of fusing and/or recrystallizing is carried out in a reducing atmosphere (paragraph 0065).

In re claims 7-10, Yudasaka et al discloses the step of heating using laser pulses and cooling (paragraph 0045 – paragraph 00070).

In re claims 11-13, Yudasaka et al discloses the nanoparticles are deposited in a suspension of a carrier fluid (paragraph 0069 – paragraph 0074).

In re claims 14-18, Yudasaka et al discloses the different printing processes (paragraph 0045 – paragraph 0075).

In re claims 19-20, Yudasaka et al discloses the electronic component is a transistor, capacitor, or a diode (Figure 5; Figure 6; Figure 7).

In re claims 22-26, Yudasaka et al discloses a method of manufacturing an electronic component comprising at least one n- or p-doped portion, comprising the steps of: co-depositing discrete nanoparticles of semi-conducting material as a solid in liquid suspension with a dopant on a substrate, the nanoparticles consisting of only silicon element or germanium element (i.e. in this case, it is inherent that nanoparticles of only either silicon element or germanium element have surface termination, which is usually hydrogen. Yudasaka et al discloses compound 5 that is only silicon element nanoparticle with surface termination of hydrogen); fusing in situ on the substrate the nanoparticles with one or more first laser pulses to form a continuous layer through a physical change of melting; and recrystallizing the continuous layer (paragraph 0004; paragraph 0045 – paragraph 0075).

In re claims 27-29, Yudasaka et al discloses the step of fusing and/or recrystallizing is carried out in a reducing atmosphere (paragraph 0065).

In re claim 30, Yudasaka et al discloses the electronic component is a transistor, capacitor, or a diode (Figure 5; Figure 6; Figure 7).

In re claims 63-64 and 68, Yudasaka et al discloses both a first semiconducting material and a second semiconducting material (paragraph 0045 – paragraph 0070; Example 1).

In re claim 71, Yudasaka et al discloses depositing nanoparticles on a further substrate, causing the nanoparticles to fuse and recrystallise to form a recrystallized film or layer (paragraph 0045 – paragraph 0070; Example 1).

In re claims 74-75, Yudasaka et al discloses a component using the above method (Example 1; Figure 5, Figure 6, Figure 7).

Claims 1-20, 22-30, 63-64, 68, 71, and 74-75 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Furusawa et al (WO 00/59044 – US Patent 6,518,087 is patent family member used for citation purposes).

In re claims 1-3, Furusawa et al discloses a method of manufacturing an electronic component comprising at least one n- or p-doped portion, comprising the steps of: co-depositing semi-conducting nanoparticles as a solid in liquid suspension and dopant on a substrate, the nanoparticles consisting of only either silicon element or germanium element (i.e. in this case, it is inherent that nanoparticles of only either silicon element or germanium element have surface termination, which is usually hydrogen. Furusawa et al discloses compound 5 that is only silicon element nanoparticle with surface termination of hydrogen); fusing in situ on the substrate the nanoparticles by heating to form a continuous layer through a physical change of melting; and recrystallizing the continuous layer (column 9 – column 12).

In re claims 4-6, Furusawa et al discloses the step of fusing and/or recrystallizing is carried out in a reducing atmosphere (column 9 – column 12).

In re claims 7-10, Furusawa et al discloses the step of heating using laser pulses and cooling (column 9 – column 12).

In re claims 11-13, Furusawa et al discloses the nanoparticles are deposited in a suspension of a carrier fluid (column 9 – column 12).

In re claims 14-18, Furusawa et al discloses the different printing processes (column 9 – column 12).

In re claims 19-20, Furusawa et al discloses the electronic component is a transistor, capacitor, or a diode (Figure 3; Figure 4; Figure 5).

In re claims 22-26, Furusawa et al discloses a method of manufacturing an electronic component comprising at least one n- or p-doped portion, comprising the steps of: co-depositing discrete nanoparticles of semi-conducting material as a solid in liquid suspension with a dopant on a substrate, the nanoparticles consisting of only either silicon element or germanium element (i.e. in this case, it is inherent that nanoparticles of only either silicon element or germanium element have surface termination, which is usually hydrogen. Furusawa et al discloses compound 5 that is only silicon element

nanoparticle with surface termination of hydrogen); fusing in situ on the substrate the nanoparticles with one or more first laser pulses to form a continuous layer through a physical change of melting; and recrystallizing the continuous layer (column 9 – column 12).

In re claims 27-29, Furusawa et al discloses the step of fusing and/or recrystallizing is carried out in a reducing atmosphere (column 9 – column 12).

In re claim 30, Furusawa et al discloses the electronic component is a transistor, capacitor, or a diode (Figure 3; Figure 4; Figure 5).

In re claims 63-64 and 68, Furusawa et al discloses both a first semiconducting material and a second semiconducting material (column 9 – column 12; Example 1).

In re claim 71, Furusawa et al discloses depositing nanoparticles on a further substrate, causing the nanoparticles to fuse and recrystallise to form a recrystallized film or layer (column 9 – column 12; Example 1).

In re claims 74-75, Furusawa et al discloses a component using the above method (Example 1; Figure 3; Figure 4; Figure 5).

Response to Arguments

Applicant's arguments with respect to claims 1 and 22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY HO whose telephone number is (571)270-1432. The examiner can normally be reached on M-F: 9:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. H./
Examiner, Art Unit 2815
/Kenneth A Parker/
Supervisory Patent Examiner, Art Unit 2815